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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HU, HENRY S

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,785

Applicant(s)

HARADA ET AL.

Examiner

Henry S. Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment of November 24, 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 5-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-10 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to Amendment as well as the letter in response to the notice of non-compliant amendment, both being filed on November 24, 2004. No claim was amended, while **new parent Claims 3-4 and new dependent Claims 5-10** were both added. To be more specific, the Applicants provide the support for new **Claims 3-10** on pages 8-9 of Remarks.

With respect to specification objections (a) and (b), the Applicants have made proper corrections on the paragraph on pages 15 and 18 regarding the use of “**1 to 1.20**” and “**a molar ratio**” as suggested by the examiner. In view of above amendment, the examiner thereby withdraws specification objections. **Claims 1-10 are now pending.** An action follows.

2. Newly submitted claim 3 and 5-10 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

New parent Claim 3 and dependent Claims 5-10 all relate to a process of making the fluoropolymer of Claim 1 in the presence of an organometallic compound as polymerization initiator in an organic solvent, while other new parent **Claim 4** relates to the fluoropolymer containing monomeric unit of Claim 1. Claim 4 is thereby joined with original Claims 1 and 2, which relate to a **product by process claim** as a fluorinated

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polymer obtained by living anion polymerization of a monomer having a styrene-based structure of the general formula (1). **It is noted that Claims 5-10 have wrong claim dependency and a change to be dependent from new parent process Claim 3 accordingly.** It is also noted that **Komoriya has used a materially different process to prepare the claimed monomers,** please see previous discussion on ODP rejection.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, **claims 3 and 5-10 are withdrawn from consideration as being directed to a non-elected invention.** See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Argument

3. Applicant's argument filed on November 19, 2004 has been fully considered but they are not persuasive. The focal arguments related to the patentability will be addressed as follows: In view of the Applicants' argument on pages 15-19 of Remarks, all 103 rejections are sustained.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise

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extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-2 and 4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 9-18 of copending Application No. **10/316183**, now **USPG-PUB 2003/0232940 A1 to Komoriya et al. (with an earlier "priority date of 12-31-2001")** for the reasons set forth in **paragraphs 3-5 of office action dated 7-28-2004 as well as the discussion below.**

5. **Applicants:** Applicant has claimed an unexpected way of obtaining a fluorine-containing polymerizable monomer having a **styrene-based** structure of the general formula (1) with two fluorinated alcohol-based substituents. The Applicants further allege that it is obtained by living anion polymerization while Komoriya uses only radical polymerization. The Applicants furthermore allege that the polymer has "**a polydispersity index of 1 to 1.20**", while Komoriya's polymer has a **polydispersity index (Mw/Mn) in the range of 1.5-2.0** as shown on page 35 for examples 2-18. Therefore, **the polymers are different.**

6. **Examiner:** As discussed in the earlier office action, it is true that Claims 9-18 of Komoriya does not specify the type of polymerization. In a very close examination, Komoriya has disclosed in his specification that both radical polymerization and ionic polymerization can be used in this regard. In some cases, coordinated anionic polymerization or living anionic polymerization can be particularly applied (page 27, line 13-18).

With respect to the argument on a difference in polydispersity index (M_w/M_n), which is due to different type of polymerization used, Komoriya would have obtained the claimed polydispersity index if a living anionic polymerization is applied in his system.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. *The limitation of parent **Claim 1** of the present invention relates to a fluorinated polymer obtained by living anion polymerization of a monomer having a styrene-based structure of the general formula (1), wherein R^1 and R^2 each are an acid labile group and R^3 is hydrogen or methyl, and having a polydispersity index of 1 to 1.20. Other parent **Claim 4** relates to the fluoropolymer containing monomeric unit of Claim 1. See other limitations of dependent Claim 2.*

9. Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. (USPG-Pub 2002/0164538 A1) or Hashimoto et al. (USPG-Pub 2002/0155376 A1), each individually in view of Sprague et al. (Journal of Fluorine Chemistry, Vol. 52, pp. 301-306, (1991)) for the reasons set forth in **paragraphs 8-10 of office action dated 7-28-2004 as well as the discussion below.**

10. Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Middleton (US 3,179,640) in view of Sprague et al. (Journal of Fluorine Chemistry, Vol. 52, pp. 301-306, (1991) and either Allen et al. (USPG-Pub 2002/0164538 A1) or Hashimoto et al. (USPG-Pub 2002/0155376 A1) for the reasons set forth in **paragraphs 11-14 of office action dated 7-28-2004 as well as the discussion below.**

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11. Claim 1-2 and 4 are provisionally rejected under 35 U.S.C. 103(a) as being obvious over copending Application No. **10/316183**, now **USPG-PUB 2003/0232940 A1** to **Komoriya et al.** (with priority date 12-31-2001) for the reasons set forth in paragraphs **15-16** of office action dated **7-28-2004** as well as the discussion below and the ODP discussion above.

12. **Applicants:** Applicant has claimed an unexpected way of obtaining a fluorine-containing polymerizable monomer having a **styrene-based** structure of the general formula (1) with two hydroxyfluoroalkyl-based substituents. With respect to 103 rejections over (Middleton, Allen or Hashimoto)/Sprague for Claims 1-2, the Applicants allege that the secondary **Sprague** reference only discloses the aromatic ring of compound 2 as shown in Fig. 1 is very electron poor due to the presence of α,β,β -trifluoro ($-\text{CF}=\text{CF}_2$). However, the claimed compound (1) with the presence of $-\text{CH}=\text{CH}_2$ is electron rich. The Applicants further allege that **the teachings of Sprague would only make the resultant styrene (having two substituents) “unfavorable” in polymerization.** The Applicants furthermore allege the above-mentioned prior art, in combination or alone, fails to teach or suggest a link to use two substituents.

13. **Examiner:** As discussed in the earlier office action for parent **Claim 1**, each of Middleton, Allen and Hashimoto has disclosed the moiety of the claimed monomer but is **silent about adding an additional substituent of hydroxyfluoroalkyl group on styrene** and forming a structure of meta-symmetry (for Claim 2). **Sprague et al.** has

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already taught the preparation of a fundamentally the same claimed compound but with α,β,β -trifluorostyrene structure (page 301-302). Although Sprague's compound 2 as shown in Fig. 1 is a "**electron poor**" monomer due to the presence of both α,β,β -trifluoro ($-\text{CF}=\text{CF}_2$) and the electron-withdrawing substituent(s) on aromatic ring. Additionally, Sprague has already admitted that it is **a very poor monomer in the course of free radical-induced polymerization** (page 302, bottom paragraph – page 304, first paragraph). Therefore, Sprague has **implicitly** suggested "not a good approach to use $-\text{CF}=\text{CF}_2$ group on his aromatic moiety" for polymerization.

14. The examiner has fully recognized that the preparation of current monomer (1) would need a **full effort in organic synthetic research**. It is noted that Sprague's monomer, which has been made from a materially different approach, is quite different from the claimed monomer in view of chemistry and reactivity. However, in the course of polymerization the degree of reactivity may be somewhat changed but its function does not totally depend on the type of monomer being used. It is noted that both $-\text{CH}=\text{CH}_2$ and $-\text{CF}=\text{CF}_2$ are well-known species as polymerizable monomeric units in the art.

15. In summary, Sprague **does teach a concept** of providing an additional hydroxyfluoro-alkyl-based substituent onto the styrene in order to gain **more functionalities** with advantage being well known in the art; Sprague may suggest **implicitly** the use of $-\text{CH}=\text{CH}_2$ since his final styrene is unfavorable for polymerization

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due to the presence of $-\text{CF}=\text{CF}_2$. It is noted that $-\text{CH}=\text{CH}_2$ and $-\text{CF}=\text{CF}_2$ are both well known as polymerizable monomeric units in the art.

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

17. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the

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organization where this application or proceeding is assigned is (703) 872-9306 for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Henry S. Hu

Examiner, AU 1713, USPTO

January 18, 2005



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